

IN THE CLAIMS

1.-18. (Canceled).

19. (Original) A device comprising:

a plurality of thermocouple conductors including at least a first, a second and a third thermocouple conductor, wherein the first thermocouple conductor is of a first type, the second thermocouple conductor is of a second type, and the third conductor is of a type different from the second type;

at least first and second thermocouple junctions, wherein the first thermocouple junction is formed from the first and second thermocouple conductors and the second thermocouple junction is formed from the second and third thermocouple conductors; and

heat shrinkable polymer material melted to seal the at least first and second thermocouple junctions.

20. (Original) The device of claim 19, further comprising a distal end, wherein the at least first and second thermocouple junctions are positioned such that a first thermocouple junction is located at the distal end and the at least second thermocouple junction is located further from the distal end than the first thermocouple junction.

21. (Original) The thermocouple of claim 19, wherein the sealing the thermocouple junction provides a reproducible confined shape having a height less than about 0.008 inches and a width less than about 0.010 inches.

22. (Original) The device of claim 19, wherein the device is adapted and sized to fit into a catheter, and wherein the second end further comprises at least three terminations of the at least three thermocouple conductors, and wherein a difference in voltage at the thermocouple junctions available at the at least three terminations indicates a difference in temperature along the length of the catheter.

23. (Original) The device of claim 19, wherein the thermocouple conductor types are selected from a set of A.S.T.M. types T, J, K, E, S, R, and B.
24. (Original) A device comprising:
N thermocouple conductors including at least a first conductor and a second conductor;
a range of $N/2$ to $N-1$ thermocouple junctions formed from thermocouple conductor pairs, wherein a thermocouple junction is comprised of two thermocouple conductors of different types, and wherein one thermocouple conductor type may be used in comprising more than one thermocouple junction; and
heat shrinkable polymer material melted to seal thermocouple junctions.
25. (Original) The device of claim 24, wherein the device further comprises a distal end, and wherein the thermocouple junctions are formed at different distances from the distal end.
26. (Original) The device of claim 24, wherein the thermocouple conductor types are selected from a set of A.S.T.M. types T, J, K, E, S, R, and B.
27. (New) The device of claim 19, wherein the first thermocouple junction is a soldered junction of the first thermocouple conductor and the second thermocouple conductor.
28. (New) The device of claim 19, wherein the second thermocouple junction is a soldered junction of the second thermocouple conductor and the third thermocouple conductor.
29. (New) The device of claim 19, wherein the first thermocouple junction further comprises a fuse such that the fuse causes the device to lose the properties of a thermocouple when an electrical rating is exceeded across the first thermocouple junction.
30. (New) The device of claim 19, wherein the second thermocouple junction further comprises a fuse such that the fuse causes the device to lose the properties of a thermocouple

when an electrical rating is exceeded across the second thermocouple junction.

31. (New) The device of claim 19, wherein a length of the first thermocouple junction together with the polymer material falls within a range of about 0.05 to 0.5 inches.

32. (New) The device of claim 19, wherein a length of the second thermocouple junction together with the polymer material falls within a range of about 0.05 to 0.5 inches.

33. (New) The device of claim 19, wherein the polymer material is polyethylene terephthalate (PET).

34. (New) The device of claim 19, wherein the polymer material is fluorinated ethylene propylene (FEP).

35. (New) The device of claim 24, further comprising a first thermocouple junction and a second thermocouple junctions formed using at least two of the N thermocouple conductors, wherein the at least first and second thermocouple junctions are positioned such that the first thermocouple junction is located at a distal end and the at least second thermocouple junction is located further from the distal end than the first thermocouple junction.

36. (New) The thermocouple of claim 24, wherein the thermocouple junctions with heat shrinkable polymer material melted thereto have a height less than about 0.008 inches and a width less than about 0.010 inches.

37. (New) The device of claim 24, further comprising at least one fuse in the N/2 to N-1 thermocouple junctions.

38. (New) The device of claim 24, wherein the polymer material is polyethylene terephthalate (PET).
39. (New) The device of claim 24, wherein the polymer material is fluorinated ethylene propylene (FEP).
40. (New) The device of claim 24, wherein the device is adapted and sized to fit into a catheter, and wherein the N thermocouple conductors include at least three terminations of at least three thermocouple conductors, and wherein a difference in voltage at the thermocouple junctions available at the at least three terminations indicates a difference in temperature along the length of the catheter.